MISSOURI RIVER CHANNEL STABILIZATION AND NAVIGATION PROJECT

REPORT

TO THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

BY MR. KERR

FROM THE

SUBCOMMITTEE ON ARMY CIVIL FUNCTIONS

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[1] Temporarily assigned.

MISSOURI RIVER CHANNEL STABILIZATION AND NAVIGATION PROJECT

The Subcommittee on Army Civil Functions submits the following report of its study of the planning report submitted by the Corps of Engineers to the subcommittee in January 1952, on the Missouri River Channel Stabilization and Navigation Project.

INTRODUCTION

The Corps of Engineers have spent over a quarter of a billion dollars ($261,936,098 as of June 30, 1951) on channel stabilization and navigation improvements on the lower Missouri River, a distance of 762 miles from the mouth of the river at St. Louis upstream to Sioux City, Iowa. To date these expenditures have not produced navigation to any appreciable extent,and it appears that the Corps' work has actually increased floods on the river, year after year.

In 1951 this subcommittee passed a resolution directing the Corps of Engineers to make and submit to it planning reports for all active projects. The Corps submitted its planning report on this Missouri River project in January 1952, showing a benefit-cost ratio of 1.9 to 1. In this connection the subcommittee recalled the benefit-cost ratio reported by the Corps for the proposed Tennessee-Tombigbee Waterway of 1.13 to 1. In 1951 the subcommittee held extensive hearings on the Tombigbee project, and the evidence showed that the ratio for that project was far below unity, and possibly as low as 0.27 to 1. In light of this experience with the Corps' judgment in these matters, the subcommittee directed the committee staff to make an analysis of the benefits shown in the Corps' planning report for the Missouri River project. In a hearing held on June 30, 1952, the preliminary results of this analysis by the staff were presented to the subcommittee. The hearing was attended by General Pick, the Chief of Engineers, and other high-ranking officers of the Corps, including the Division Engineer of the Missouri River Division.

Counsel for the committee made the staff's presentation in this hearing through the use of graphs, charts, and documentary evidence. The evidence thus adduced disclosed serious weaknesses in the methods used by the Corps in compiling the data and results shown in the planning report. It fully appeared that the planning report was based upon a report made by the Missouri River Division of the Corps dated July 28, 1950. General Pick lamely sought to disown the Missouri River Division report, testifying that it was made without his consent and without his knowledge, and that it had rested in his office for the past year without action being taken thereon. The fact of the matter is that the data furnished to the committee in the planning report of January 1952 was bottomed on the Missouri River Division report.

The committee staff dissected several components of the Corps' computation of the benefits in the planning report, and pointed up the

sharp differences of opinion within the Corps itself as to the actual economic facts involved, notably in the Corps' prediction of potential tonnage on the river. In addition the committee staff presented strong evidence that the bank stabilization work done to date by the Corps has not resulted in a decrease of floods. And the staff seriously challenged the Corps' computation of erosion control benefits. In summary, the committee staff's presentation has cast serious doubt on the Corps opinion and judgment on this project.

At the conclusion of the hearing, General Pick very significantly testified as follows:

> All I am asking is that you remember that what we are trying to do out there is under authority which has been imposed upon the Chief of Engineers by the Congress. If we have overstepped our limits, if we are doing it incorrectly, I think it is fine if we are checked up and told what to do, and are made to do it right. Other than that I have nothing else to say.

DESCRIPTION OF THE PROJECT

The navigation and bank stabilization work which has been done on the 762 miles of the lower Missouri River is in two parts: the portion of the river from the mouth to Kansas City, and the second portion of the river, from Kansas City to Sioux City. Work on the river from the mouth at St. Louis to Kansas City was commenced under the River and Harbor Act of 1912, long before the Pick-Sloan plan for the upper river or main-stem upper river reservoirs was ever seriously proposed. The 1912 act authorized a 6-foot channel. The channel width was fixed in the 1925 River and Harbor Act at 200 feet, and the depth and width of the channel were increased to 9 feet and 300 feet, respectively, by the 1945 River and Harbor Act. The work, 79 percent complete at this time, has included revetments, dikes, removal of rock from the river bed, cutoffs to eliminate long bends, chute closure dikes, and removal of snags.

The work on the portion of the river between Kansas City and Sioux City was first authorized in the 1927 River and Harbor Act for a channel 6 feet deep and 200 feet wide. These dimensions were increased in the 1945 act to 9-foot depth and 300-foot width. This work is now 59 percent complete. The Corps' scheduled completion date for both portions of the project is 1960.

Under natural conditions, before the Corps commenced its work, the river from bank to bank varied in width from 1,000 feet to more than a mile, averaging 3,200 feet. The Corps has sought to compress and narrow the width of the river, and to stabilize the channel. Of course, this work is futile unless the annual flood hazard is reduced or minimized. If the river velocity has not increased in the narrowed river width, it follows that the carrying capacity of the river has been decreased. What has actually occurred, by virtue of the Corps' work, is that the carrying capacity of the river has decreased so materially that floods have occurred at much lower gage height readings with smaller volumes of water than at the 1929 flood stage and carrying capacity. This will be developed more fully below.

THE HIGHLY DUBIOUS MISSOURI RIVER DIVISION REPORT

In December 1949 the Division Engineer for the Missouri River Division directed that the current justification of the project be reevaluated, including navigation benefits, land accretion and better-

ment, erosion and other protection to lands and structures. In this connection he availed himself of the expert assistance of the Board of Engineers for Rivers and Harbors which was created by Congress as a body of specialists in these matters. The experts of the Board went out in the field and made a very comprehensive study of the project. They were assisted in this work by the Missouri River Division, the Omaha District and the Kansas City District Offices of the Corps of Engineers. The Board's experts made a report on July 28, 1950, and submitted it to the Missouri River Division. This report reached the following conclusions:

Potential tonnage (annual)	4, 000, 000
Year after completion when the estimated tonnage will obtain	50th year (2010)
Annual savings in transportation costs after full development of potential tonnage	$9, 140, 730
Average annual benefits during economic life of the project (1960–2010)	4, 900, 000
Annual benefits assignable to this project by the engineers	2, 450, 000

These figures and calculations were too conservative to suit the Missouri River Division, so that Division wrote a paper commenting on the report and arbitrarily added 10 percent to the potential tonnage figure and 10 percent to the annual savings figure. Thereafter the report and the comments of the Missouri River Division were studied by representatives of the Office of the Chief of Engineers who concluded that the report and the comments were ultra-conservative. As a result, the potential tonnage figures were arbitrarily increased by 25 percent and the period of ultimate realization of navigation benefits was decreased from the 50 years stated in the report, to 20 years. The Missouri River Division followed the leadership of the Office of the Chief of Engineers and changed the computations in these and other major respects. However, in doing so they retained the original Board report but substituted pages, switched language and transposed sections, all the while ostensibly retaining the original Board report. To all outward appearances, this drastically different revised report was the same as the Board's original report. Curiously, the experts of the Board who wrote the original report were not consulted about the changes, nor even informed of them.

A comparison of the original report (identified as "tentative") and the revised report is shown in the following table:

Comparison of tentative and revised reports

	Tentative	Revised
Potential tonnage (annual)	4, 000, 000	5, 000, 000
Year after completion when the estimated tonnage will obtain	50th year (2010)	20th year (1980)
Annual savings in transportation costs after full development of potential tonnage	$9, 140, 730	$15, 000, 000
Average annual benefits during economic life of the project (1960–2010)	[1] 4, 900, 000	13, 398, 000
Annual benefits assignable to this project by the engineers	[1] 2, 450, 000	6, 699, 000

[1] This figure was not given in the tentative report. It was computed by the staff of the committee on the basis of data in that report.

SOURCES

Tentative: Tentative Report on the Transportation Economics Phase of the Missouri River Survey of 1950 (prepared by Clyde N. Thompson, transportation economist, assisted by staff personnel of the Board of Engineers for Rivers and Harbors, the Missouri River Division Office, the Omaha District Office, and the Kansas City District Office; under supervision of A. L. Malone, Chief Survey

Branch, Economics Division, Board of Engineers for Rivers and Harbors, pursuant to the provisions of O. & R.), May 4, 1950.

Revised: Report on Missouri River Channel Stabilization and Navigation Project, Sioux City to Mouth, Appendix III, Benefits. Corps of Engineers, U. S. Army, Office of the Division Engineer, Missouri River Division, Omaha, Nebr., July 28, 1950.

The table clearly shows the major surgery. It suited the Corps' purposes to have a glowing picture of this project, and they made the desired glossy showing in the revised report, which is the basis of the planning report submitted to the committee. The whole thing is completely unreliable. The graph at page 17 of the hearings tells the story at a glance.

NAVIGATION ON THE RIVER, 1935–1950

In computing benefit-cost ratios for navigation projects it is logical that past experience be drawn from to a substantial degree, and of course this was done in the Board's report. During the 15-year period between 1935 and 1950, a total of 9,812,837 tons were hauled on the river between Kansas City and the mouth. Of this tonnage, 44.7 percent consisted of materials and construction machinery used by the Corps itself in doing the work. Another 41.1 percent represented sand and gravel and some stone, clay and limestone. General Pick conceded in the hearings that the bulk of this tonnage is sand and gravel dug out of the river bed and hauled back to the shore, only a short distance. The 4,033,902 tons thus hauled can in no way be attributed to navigation improvement expenditures. (The Corps has accordingly and properly found it necessary to exclude this tonnage from their computations of benefits.)

The balance of the tonnage hauled during this period was in the nature of commercial tonnage totaling only 14.2 percent of the total tonnage. The 14.2 percent is made up of 12.1 percent hauled by the Federal Barge lines and 2.1 percent ascribable to purely commercial traffic. The Federal Barge Line traffic was subsidized by the taxpayers since it was hauled at an operating loss year after year. That leaves the 2.1 percent commercial traffic which is negligible.

It is quite pertinent to note the navigation benefits claimed by the Corps for the 762 miles of the project for 1947–1951, and balance them against the operating losses of the Inland Waterways Corporation (which operates the Federal Barge Lines) for this period. The figures are as follows:

	Benefit claimed by Corps	Operating losses of Federal Barge Line on Missouri River
1947	$235,000	$110,178
1948	107,000	109,127
1949	216,000	196,396
1950	250,000	243,987
1951	400,000	156,951

In 1948–1950 the operating losses of the Inland Waterways Corporation offset the Corps' claimed navigation savings, and in 1948 even exceeded the claimed savings.

The maintenance cost per ton for the section of the river from Kansas City to the mouth was prohibitive. In 1944 it was $49.40 per ton; in 1948, $45.80 per ton; in 1949, $29.95 per ton; and in 1950, $19.20 per ton.

Taking the next portion of the river, from Kansas City to Sioux City, the picture is worse. Of a total of 9,130,065 tons hauled from 1935 to 1950 the materials used by the Corps amounted to 80.9 percent, and sand and gravel to 16.6 percent. The Inland Waterways did not commence operation on this section of the river until 1946, and in the overall period accounted for only 0.4 percent of the tonnage, never over 2.2 percent in any year. The pure commercial traffic was almost as negligible, 2.1 percent for the entire period. The maintenance costs per ton were even more prohibitive. For selected years, they are shown as follows:

1938	$26,400	1947	$740
1944	8,380	1948	109
1945	1,165	1949	159
1946	1,680	1950	80

It is no wonder that General Pick commented in the hearing:

> As to the navigation project, nobody maintains that that navigation project has ever been completed or has ever been used extensively.

This, notwithstanding the fact that over a quarter of a billion dollars has been spent on the project.

THE CORPS' PREDICTION FOR THE FUTURE

A table on page 28 of the printed hearing shows the navigation benefits estimated by the Corps for the past (1935–1951), and predicted for the future (1952–1960). Column (1) contains the Corps' figures while column (2) contains the figures calculated in the original report. In 1951 the Corps used the figure $400,000, whereas the original report used the lower figure of $375,000, a difference of only $25,000. Then, year by year from 1952 divergence between these two figures increases drastically. The result is that the Corps predicts a saving of $3,300,000 for 1960, whereas the original report predicted a saving of only $1,507,000, which is less than half. The reason for this maneuver on the part of the Corps is readily discerned. The Corps wanted to start off in 1961 with a predicted saving of $3,900,000. (The project is scheduled for completion in 1960, and 1961 will be the first year of realization of the work.) Actually the Corps has used the premise of $3,900,000 in both the Missouri River Division report and planning report, as the first step in exaggerating the potential benefits from the project. This never could be done with figures as conservative as those originally, computed so the Corps adopted the simple expedient of doubling the original figures for 1960.

EROSION CONTROL BENEFITS

The Corps and the committee staff differed markedly in the matter of computing erosion control benefits. The Corps has used the figure of $19,584,000 for predicted future average annual benefits over a 60 year-period (1951–2010) whereas the staff has computed the much lower figure of $14,983,000. In the planning report the Corps used the figure $19,877,000 for the period 1961–2010, or a 50-year period.

The staff did not go into all ramifications of this phase of the Corps' computations but the weakness in the method used by the Engineers is quickly discerned from certain features of the matter.

The land which the Corps claims will benefit from the project is broken down into 4 categories. First, there is the 135,400 acres of accretion land, which is land built up by the river from time to time. The second area is the 605,900-acre meander belt which is 1,000 feet to more than a mile wide, and averages 3,200 feet. Thirdly, there is the 740,000 acres representing 3½ miles of land which is landward of the meander belt. Lastly there is the urban area—towns and other communities. The committee staff accepted the Corps' acreage but severely challenged the valuation assigned by the Corps to the land. The Corps has figured that the accretion land will benefit on the average to the extent of $8.50 an acre, and the meander belt $15.00 an acre. The Corps reached these figures by using such methods as doubling the historical average price of corn received by farmers in the Missouri River Valley. Actually the historical average from 1911 to 1950 was 70 cents a bushel. The Corps used $1.30!

This specious method of proceeding produced for the Corps part benefits in the amount of $231,900,000 through 1951. The falsity of this figure is apparent.

The committee staff's analysis of this method of evaluation is shown in the table on page 35 of the printed hearing, in which the staff's computation is shown as $3.84 an acre against $8.50 and $15 used by the Corps. The Corps' wizarding with figures cannot square with fact.

INCREASED FLOOD HAZARD

The Corps of Engineers got many of their pile dikes and other bank stabilization structures in place on the portion of the river from Kansas City to the mouth in the thirties. And then the floods came.

In 1929 the United States Geological Survey established flood stage gage readings for the river at Waverly, Missouri, at 18.0 feet; at Boonville, Missouri, at 21.0 feet; and at Hermann, Missouri, 21.0 feet. In 1951 floods occurred at Waverly when the river was carrying substantially less water than in 1929, and at a time when the gage reading would have been only 14.7 feet in 1929. In 1951 floods occurred at Boonville when the river was carrying substantially less water than in 1929, and at a time when the gage reading would have been only 18.3 feet in 1929. In 1951 floods occurred at Hermann when the river was carrying substantially less water than in 1929, and at a time when the gage reading would have been only 17.0 feet in 1929.

This deplorable situation was not unique to 1951. It occurred in every year from 1941 to 1951, with the sole exception of 1946. The table on page 41 of the printed hearings tells this story clearly.

CONCLUSION

It is apparent that the Corps of Engineers has treated the known facts with respect to this Missouri River project most lightly and, in some instances, recklessly. The committee is thoroughly dissatisfied with the Corps' performance, and feels that such substantial doubt has been cast upon the Corps' methods that their results are hardly worthy of credence.

STATEMENT BY CONGRESSMEN DAVIS AND FORD

We concur in the above report as a proper statement of the results of the committee staff's investigation.

However, we consider the publication of the report at this time as premature. The opportunity of the Corps to explain and reply was, as a practical matter, seriously circumscribed.

The staff presentation, on which this report is based, was convincing, and our sole reservation with respect to it is the lack of a practical opportunity for the Corps of Engineers to be heard by the Subcommittee.

GLENN R. DAVIS,
GERALD R. FORD, Jr.

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